

WHAT IS CLAIMED:

1 1. A multiple layer composite for indicating the pH
2 of a fluid environment comprising a first layer
3 containing a pH indicating agent for responding to the
4 fluid in the environment and a second layer disposed
5 between said first layer and said environment to control
6 fluid contact with said first layer.

1 2. A composite as in claim 1, wherein said first
2 and second layers are selected from the group consisting
3 of polymer layers, ink layers, fibrous layers and
4 combinations thereof.

1 3. A composite as in claim 2, wherein said second
2 layer is a fluid barrier layer that is permeable or
3 impermeable to said fluid.

1 4. A composite as in claim 2, wherein one or both
2 of said first and second layers includes a matrix
3 containing a fluid regulating means.

1 5. A composite as in claim 4, wherein said fluid
2 regulating means comprises a fluid regulating additive
3 dispersed in said matrix.

1 6. A composite as in claim 5, wherein said matrix
2 comprises a polymer.

1 7. A composite as in claim 6, wherein said fluid
2 regulating additive is selected from the group consisting
3 of silica gel, superabsorbent polymers, cellulosic

4 resins, anhydride resins, polyolefin blend resins,
5 zeolites, calcium oxide, clays and calcium sulfate.

1 8. A composite as in claim 5, wherein said matrix
2 comprises a layer of printed ink having said fluid
3 regulating additive dispersed therein.

1 9. A composite as in claim 8, wherein said layer of
2 printed ink is formed with a pH indicating ink.

1 10. A composite as in claim 8, wherein said first
2 layer is a printed ink layer.

1 11. A composite as in claim 3, wherein said fluid
2 barrier layer is a microporous fluid dispersion layer.

1 12. A composite as in claim 11, wherein said fluid
2 barrier layer is a polymer layer having a moisture vapor
3 transmission rate selected to restrict fluid contact of
4 said first layer below a threshold amount of fluid in
5 said environment.

1 13. A composite as in claim 3, wherein said fluid
2 barrier layer is a fibrous layer formed of fibers having
3 surfaces coated with a moisture transmitting component.

1 14. A composite as in claim 2, wherein said fibers
2 are hollow fibers.

1 15. A composite as in claim 2, wherein said
2 composite includes coaxial fibers having inner and outer
3 layers that provide said first and second layers.

1 16. A composite as in claim 1, wherein said pH
2 indicating agent provides different responses to fluid
3 contact at different locations within said composite.

1 17. A composite as in claim 1, wherein said pH
2 indicating agent has different concentrations at
3 different locations within said thickness and said
4 different responses are color or contrast or intensity
5 variations.

1 18. A composite as in claim 1, wherein said
2 composite includes a second pH indicating agent and said
3 pH indicating agents provide different responses at
4 different locations within said thickness.

1 19. A composite as in claim 1, wherein said pH
2 indicating agent is selected from the group consisting of
3 cresol red, thymol blue, methyl yellow, methyl orange,
4 bromophenol blue, bromocresol green, methyl red, p-
5 Nitrophenol, phenol red, thymol blue, phenophthalein,
6 Alizarin yellow R and mixtures thereof.

1 20. A composite as in claim 1, wherein said
2 composite is part of an absorbent article worn on a
3 user's body.

1 21. A composite as in claim 1, wherein said
2 composite is part of a fabric softener sheet.

1 22. A composite as in claim 1, in combination with
2 a drying device having a window for viewing the
3 composite.

1 23. A composite as in claim 1, wherein said second
2 layer reduces bleed of said pH indicating agent into said
3 fluid.

1 24. A wetness indicator comprising a layer selected
2 from the group consisting of a polymer layer, an ink
3 layer, a fibrous layer and combinations thereof, said
4 layer comprising a matrix containing a pH indicating
5 agent and a fluid regulating additive.

1 25. An indicator as in claim 24, wherein said
2 matrix has a thickness and at least one surface to be
3 exposed to a fluid environment to be monitored by said pH
4 indicating agent, and said pH indicating agent and said
5 fluid regulating additive are dispersed through the
6 thickness of said matrix whereby fluid contacting the
7 surface is transmitted by said fluid regulating additive
8 into contact with said pH indicating agent within the
9 thickness of said matrix.

1 26. An indicator as in claim 25, wherein said fluid
2 penetrates said thickness of said matrix to an extent
3 that is proportional to the concentration of fluid in
4 said environment.

1 27. An indicator as in claim 26, wherein said pH
2 indicating agent provides different responses to fluid
3 contact at different locations within said thickness of
4 said matrix.

1 28. An indicator as in claim 27, wherein said pH
2 indicating agent has different concentrations at
3 different locations within said thickness and said

4 different responses are color or contrast or intensity
5 variations.

1 29. An indicator as in claim 28, wherein said
2 indicator includes a second pH indicating agent and said
3 pH indicating agents provide different color responses at
4 different locations within said thickness.

1 30. An indicator as in claim 24, wherein said fluid
2 regulating additive is selected from the group consisting
3 of silica gel; superabsorbent polymers, cellulosic
4 resins, anhydride resins, polyolefin blend resins,
5 zeolites, calcium oxide, clays and calcium sulfate.

1 31. An indicator as in claim 24, wherein said
2 composite is part of an absorbent article worn on a
3 user's body.

1 32. An indicator as in claim 24, wherein said
2 composite is a fabric softener sheet.

33. An indicator as in claim 24, in combination
with a drying device having a window for viewing the
composite.

1 34. An indicator as in claim 24, wherein said fluid
2 regulating additive provides a pathway into said matrix
3 for fluid contact with said pH indicating agent within
4 said matrix whereby less pH indicating agent is required
5 for the same response and less bleed of the agent occurs
6 as compared with an otherwise identical matrix not having
7 said pathway and providing the same response.

1 35. A wetness indicator comprising a multiple layer
2 composite of a first ink layer and a second ink layer, at
3 least one of said layers including a fluid regulating
4 additive and at least one of said layers including a pH
5 indicating agent.

1 36. An indicator as in claim 35, wherein said pH
2 indicating ink layers contain a fluid regulating additive
3 selected from the group consisting of silica gel,
4 superabsorbent polymers, cellulosic resins, anhydride
5 resins, polyolefin blend resins, zeolites, calcium oxide,
6 clays and calcium sulfate.

1 37. An indicator as in claim 36, wherein said one
2 layer provides a polymer matrix containing said pH
3 indicating agent and said fluid regulating additive.

1 38. An indicator as in claim 37, wherein said
2 polymer matrix has a thickness and at least one surface
3 to be exposed to an environment containing a fluid
4 providing the environment with a finite pH to be
5 monitored by said pH indicating agent, and said pH
6 indicating agent and said fluid regulating additive are
7 dispersed through the thickness of said matrix whereby
8 fluid contacting the surface is transmitted by said fluid
9 regulating additive into contact with said pH indicating
10 agent within the thickness of said matrix.

1 39. An indicator as in claim 38, wherein said fluid
2 penetrates said thickness of said matrix to an extent
3 that is proportional to the concentration of fluid in
4 said environment.

1 40. An indicator as in claim 39, wherein said pH
2 indicating agents provide different responses to fluid
3 contact at different locations within said thickness of
4 said matrix.

1 41. An indicator as in claim 40, wherein said pH
2 indicating agent has different concentrations at
3 different locations within said thickness and said
4 different responses are color signal intensity
5 variations.

1 42. An indicator as in claim 41, wherein said
2 indicator includes a second pH indicating agent and said
3 pH indicating agents provide different color responses at
4 different locations within said thickness.

1 43. An indicator as in claim 41, wherein said
2 composite is part of an absorbent article worn on a
3 user's body.

1 44. An indicator as in claim 37, wherein said
2 composite is a fabric softener sheet.

1 45. An indicator as in claim 37, in combination
2 with a drying device having a window for viewing the
3 composite.

1 46. An indicator as in claim 35, wherein said one of
2 said layers reduces bleed of said pH indicating agent
3 into said fluid.

1 47. A wetness indicating ink comprising a polymer,
2 a pH indicating agent and a fluid regulating additive in

3 an amount effective to provide a cured or dried layer of
4 said ink having said additive dispersed therein with
5 sufficient moisture transmission to cause a fluid
6 contacting said layer to be transmitted into contact with
7 said pH indicating agent within said layer.

1 48. An ink as in claim 47, wherein said ink is a
2 solvent ink containing a solvent soluble or solvent
3 dispersible fluid regulating additive.

1 49. An ink as in claim 48, wherein said ink is a
2 radiation curable ink containing a dispersible fluid
3 regulating additive.

1 50. An ink as in claim 47, wherein said fluid
2 regulating additive is selected from the group consisting
3 of silica gel, superabsorbent polymers, cellulosic
4 resins, anhydride resins, polyolefin blend resins,
5 zeolites, calcium oxide, clays and calcium sulfate.